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ARMY ELECTRONICS COMMAND WHITE SANDS MISSILE RANGE N--ETC F/G 4/2
19302A GSRS, MISSILE NUMBER V-9, ROUND NUMBER V-9 (20 APRIL 197--ETC(U)
MAY 78

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May 1978

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METEOROLOGICAL DATA REPORT

19302A GSRS
MISSILE NO. V-9, ROUND NO. V-9
(20 APRIL 1978)

BY

WSMR METEOROLOGICAL TEAM

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, NEW MEXICO

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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER DR-971	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) 19302A GSRS Missile No. V-9, Round No. V-9 (2d April 1978)	5. TYPE OF REPORT & PERIOD COVERED	
7. AUTHOR(s) WSMR Meteorological Team	8. CONTRACT OR GRANT NUMBER(s) DA Task 1T665702D127-02	
9. PERFORMING ORGANIZATION NAME AND ADDRESS	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS	
11. CONTROLLING OFFICE NAME AND ADDRESS US Army Electronics Command Atmospheric Sciences Laboratory White Sands Missile Range, NM	12. REPORT DATE MAY 1978	
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) US Army Electronics Command Ft. Monmouth, NJ	13. NUMBER OF PAGES 24	
15. SECURITY CLASS. (of this report) UNCLASSIFIED		16. DECLASSIFICATION/DOWNGRADING SCHEDULE
17. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited. ⑨ Meteorological data rept.		
18. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report) ⑭ ECOM-DR-971		
19. SUPPLEMENTARY NOTES		
20. KEY WORDS (Continue on reverse side if necessary and identify by block number) 1. Ballistics 2. Meteorology 3. Wind		
21. ABSTRACT (Continue on reverse side if necessary and identify by block number) Meteorological data gathered for the launching of 19302A GSRS, Missile No. V-9, Round No. V-9, are presented in tabular form.		

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CONTENTS

	PAGE
INTRODUCTION -----	1
DISCUSSION -----	1
LC METEOROLOGICAL SITE DESCRIPTION -----	2
TABLES	
I. Surface Observations taken at LC-33 -----	3
II. RAPTS-T-9 Pilot-Balloon-Measured Wind Data, LC-33 at 0900 MST -----	4
III. RAPTS-T-9 Pilot-Balloon-Measured Wind Data, SMR at 0900 MST -----	5
IV. RAPTS-T-9 Pilot-Balloon-Measured Wind Data, APACHE at 1050 MST -----	7
V. Anemometer-Measured Wind Speed and Direction, Pole No. 1 -----	8
VI. Anemometer-Measured Wind Speed and Direction, Pole No. 2 -----	9
VII. Anemometer-Measured Wind Speed and Direction, Tower Level 12' -----	10
VIII. Anemometer-Measured Wind Speed and Direction, Tower Level 62' -----	11
XI. Anemometer-Measured Wind Speed and Direction, Tower Level 102' -----	12
X. Anemometer-Measured Wind Speed and Direction, Tower Level 202' -----	13
XI. SMR Significant Level Data (Release Time: 0900 MST) -----	14
XII. SMR Upper Air Data (Release Time: 0900 MST) -----	15
XIII. SMR Mandatory Levels (Release Time: 0900 MST) -----	17

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INTRODUCTION

19302A GSRS, Missile Number V-9, Round Number V-9, was launched from LC-33, White Sands Missile Range (WSMR), New Mexico, at 0900 HRS MST, 20 April 1978. The scheduled launch time was 0900 HRS MST.

DISCUSSION

Meteorological data were recorded and reduced by the White Sands Meteorological Team, Atmospheric Sciences Laboratory (ASL), White Sands Missile Range, New Mexico. The data were obtained by the following methods:

1. Observations

a. Surface

(1) Standard surface observations to include pressure, temperature ($^{\circ}\text{C}$), relative humidity, dew point ($^{\circ}\text{C}$), density (gm/m^3), wind direction, wind velocity and cloud cover were made at the LC-33 Met Site at T-0 mins.

(2) Anemometer data were provided from existing pole mounted and tower mounted anemometers at LC-33. Monitor of wind speed and direction from one anemometer was also provided in the launch control room.

b. Upper Air

(1) Low level wind data were obtained from RAPTS-T-9 pibals observations at T-0 mins as follows:

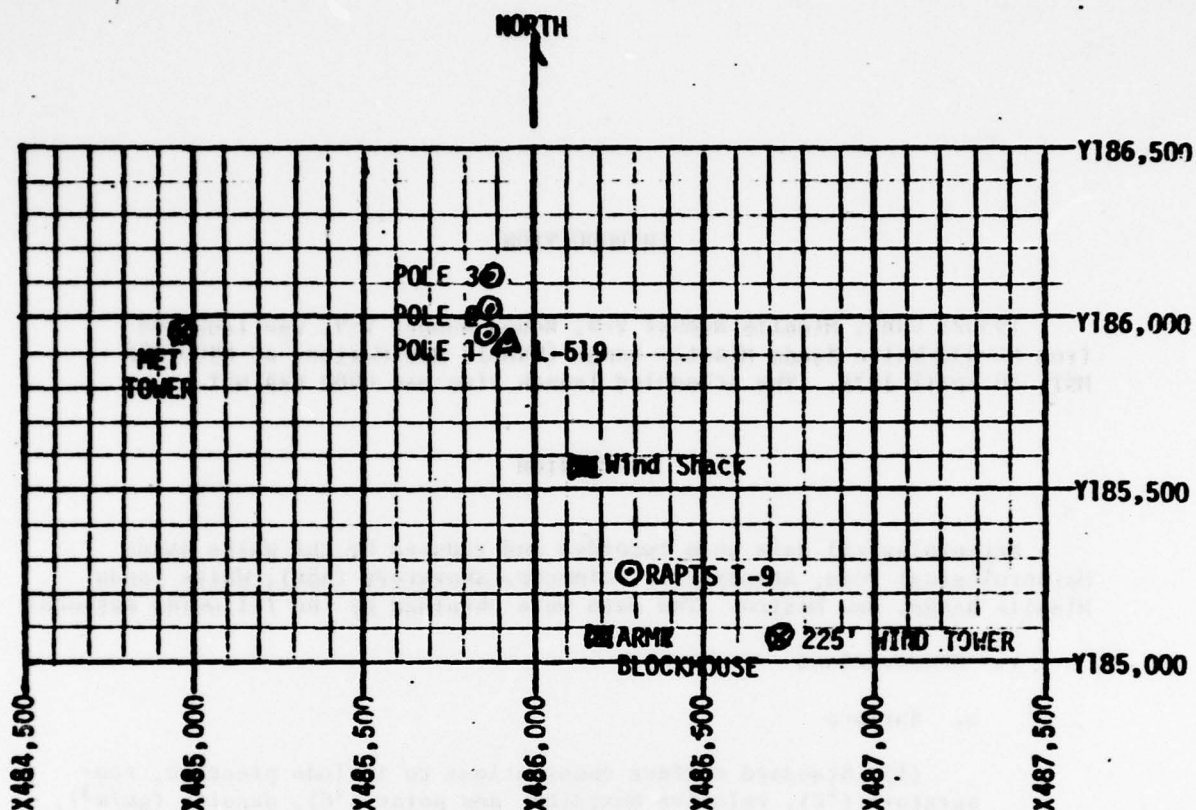
SITE & ALT.

LC-33 900 meters (15 meter incs)

APA 900 meters (30 meter incs)

SMR 900 meters (30 meter incs)

(2) Air structure data (rawinsonde) were collected at the SMR Met Site at T-0 mins. Data were collected from surface to 125% of apogee in 100 meter incs.



1. MET TOWER - 4 Bendix Model T-120 Anemometers at 12 ft, 62 ft, 102 ft and 202 ft with E/A recorders in Wind Shack.
2. POLE ANEMOMETER - Bendix Model T-120 with E/A recorders in Wind Shack
 - (a) Pole #1 - 38.7 ft
 - (b) Pole #2 - 53.0 ft
 - (c) Pole #3 - 83.6 ft
3. 225 FT WIND TOWER - 5 Bendix Model T-120 Anemometers at 35 ft, 88 ft, 128 ft, 168 ft and 200 ft with 5 X-Y visual indicators in Blockhouse.
4. RAPTS T-9 - Radar Automatic Pilot-Balloon Tracking System T-9 Radar

The data are presented in the following tabulations:

ELEVATION	3,987	FEET/MSL
PRESSURE	880.6	MBS
TEMPERATURE	20.2	°C
RELATIVE HUMIDITY	20	%
DEW POINT	-3.5	°C
DENSITY	1,042.5	GM/M ³
WIND SPEED	02	MPH
WIND DIRECTION	240	DEGREES
CLOUD COVER	CLEAR	

TABLE I. SURFACE OBSERVATIONS TAKEN AT LC-33
AT 0900 HRS MST/20 APRIL 1978
19302A GSRS, MISSILE NO. V-9, ROUND V-9

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
SUR	240	02.0
100	307	01.5
200	014	00.5
300	063	01.5
400	111	02.0
500	112	02.0
600	112	02.0
700	087	02.5
800	061	02.5
900	093	04.0
1000	124	05.0
1100	123	04.5
1200	121	04.0
1300	137	04.0
1400	152	04.0
1500	134	04.0

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
1600	116	04.0
1700	102	03.5
1800	088	03.0
1900	021	03.5
2000	314	04.0
2100	301	07.5
2200	287	10.5
2300	287	11.0
2400	287	11.5
2500	294	12.0
2600	300	12.5
2700	301	13.0
2800	302	13.0
2900	308	13.0
3000	313	12.5

TABLE II. RAPTS-T-9 PILOT-BALLOON-MEASURED WIND DATA,
LC-33 AT 0900 HRS MST/20 APRIL 1978
19302A GSRS, MISSILE NO. V-9, ROUND NO. V-9

PIBAL RELEASE POINT WSTM COORDINATES:

X = 486,302.67 Y = 185,283.13 Z = 3,989.47

APPROXIMATELY: 1 MILE SW OF LAUNCHER.

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
SUR	145	02.0
100	105	02.5
200	065	02.5
300	058	05.0
400	050	07.5
500	051	06.5
600	051	05.5
700	036	04.5
800	032	03.0
900	048	03.0
1000	076	03.0
1100	057	03.5
1200	037	04.0
1300	044	04.0
1400	050	03.5
1500	048	03.5
1600	045	03.5
1700	104	03.5
1800	162	03.5
1900	206	04.5
2000	250	05.0

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
2100	279	05.5
2200	307	06.0
2300	294	06.0
2400	280	06.0
2500	290	05.5
2600	300	05.0
2700	308	06.5
2800	315	07.5
2900	322	07.5
3000	329	07.0
3100	317	07.5
3200	305	08.0
3300	305	10.0
3400	305	12.0
3500	307	13.0
3600	308	14.0
3700	312	13.0
3800	316	12.0
3900	306	12.5
4000	295	13.0
4100	291	11.5

TABLE III. RAPTS-T-9 PILOT-BALLOON-MEASURED WIND DATA,
SMR AT 0900 HRS MST/20 APRIL 1978
19302A CSRS, MISSILE NO. V-9, ROUND NO. V-9

PIBAL RELEASE POINT WSTM COORDINATES:

X = 472,441.28 Y = 214,137.54 Z = 3,999.00

APPROXIMATELY: 7 MILES NNW OF LAUNCHER.

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
4200	287	09.5
4300	287	08.5
4400	287	07.5
4500	287	09.5
4600	286	11.0
4700	293	13.0
4800	300	15.0
4900	296	14.5
5000	291	14.0
5100	298	14.0
5200	304	13.5
5300	302	13.5
5400	300	13.5
5500	305	13.5
5600	310	13.5

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
5700	313	14.0
5800	315	14.0
5900	313	13.5
6000	311	13.0
6100	302	15.0
6200	292	17.0
6300	292	16.5
6400	291	16.0
6500	299	16.5
6600	306	16.5
6700	307	17.5
6800	307	18.5
6900	314	18.0
7000	321	17.0

TABLE III. (CONT)

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
SUR	CALM	CALM
100		
200		
300		
400		
500	CALM	CALM
600	013	00.5
700	013	00.6
800	013	00.7
900	013	00.8
1000	013	00.9
1100	013	00.9
1200	357	01.1
1300	342	01.5
1400	334	02.0
1500	329	02.4

HEIGHT (FEET)	DIRECTION (DEGREES)	SPEED (MPH)
1600	325	02.9
1700	323	03.4
1800	321	03.9
1900	320	04.5
2000	319	05.0
2100	318	05.5
2200	317	05.9
2300	315	06.0
2400	313	06.2
2500	311	06.3
2600	309	06.5
2700	307	06.6
2800	305	06.8
2900	304	07.0
3000	302	07.1

TABLE IV. RAPTS-T-9 PILOT-BALLOON-MEASURED WIND DATA,
APACHE AT 1050 HRS MST/20 APRIL 1978
19302A CSRS, MISSILE NO. V-9, ROUND V-9

PIBAL RELEASE WSTM COORDINATES:

X = 481,408.1 Y = 267,771.0 Z = 3,956.0

APPROXIMATELY: 15 MILES NORTH OF LAUNCHER.

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

TIME (SEC)	SPEED (MPH)	DIR DEG
-00:30	CALM	CALM
-00:25	CALM	CALM
-00:20	01.0	100
-00:15	01.5	100
-00:10	01.0	115
-00:05	00.5	115
-00:00	CALM	CALM
+00:05	CALM	CALM
+00:10	CALM	CALM
+00:15	CALM	CALM
+00:20	CALM	CALM
+00:25	CALM	CALM
+00:30	00.5	025

TABLE V. ANEMOMETER-MEASURED WIND SPEED AND DIRECTION, POLE NO. 1
RELEASED FROM LC-33 AT 0900 HRS MST/20 APRIL 1978
19302A GSRS, MISSILE NO. V-9, ROUND NO. V-9

WSTM COORDINATES: X = 485,874.29 Y = 185,958.90 Z = 4,018.74

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

TIME (SEC)	SPEED (MPH)	DIR DEG
-00:30	MISSING	
-00:25		
-00:20		
-00:15		
-00:10		
-00:05	MISSING	
-00:00	01.0	135
+00:05	02.0	135
+00:10	02.0	135
+00:15	02.0	120
+00:20	01.0	080
+00:25	CALM	CALM
+00:30	CALM	CALM

TABLE VI. ANEMOMETER-MEASURED WIND SPEED AND DIRECTION, POLE NO. 2
RELEASED FROM LC-33 AT 0900 HRS MST/20 APRIL 1978
19302A GSRS, MISSILE NO. V-9, ROUND NO. V-9

WSTM COORDINATES: X = 485,874.93 Y = 186,012.00 Z = 4,033.57

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

TIME (SEC)	SPEED (MPH)	DIR DEG
-00:30	CALM	CALM
-00:25		
-00:20		
-00:15		
-00:10		
-00:05		
-00:00		
+00:05		
+00:10		
+00:15		
+00:20		
+00:25		
+00:30	CALM	CALM

TABLE VII. ANEMOMETER-MEASURED WIND SPEED AND DIRECTION, TOWER LEVEL 12'
RELEASED FROM LC-33 AT 0900 HRS MST/20 APRIL 1978
19302A GSRS, MISSILE NO. V-9, ROUND NO. V-9

WSTM COORDINATES: X = 484,982.64 Y = 185,957.73 Z = 3,983.00

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

TIME (SEC)	SPEED (MPH)	DIR DEG
-00:30	CALM	CALM
-00:25		
-00:20		
-00:15		
-00:10		
-00:05		
-00:00		
+00:05		
+00:10		
+00:15		
+00:20		
+00:25		
+00:30	CALM	CALM

TABLE VIII. ANEMOMETER-MEASURED WIND SPEED AND DIRECTION, TOWER LEVEL 62'
RELEASED FROM LC-33 AT 0900 HRS MST/20 APRIL 1978
19302A GSRS, MISSILE NO. V-9, ROUND NO. V-9

WSTM COORDINATES: X = 484,982.64 Y = 185,957.73 Z = 3,983.00

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

TIME (SEC)	SPEED (MPH)	DIR DEG
-00:30	CALM	CALM
-00:25		
-00:20		
-00:15		
-00:10		
-00:05		
-00:00		
+00:05		
+00:10		
+00:15		
+00:20		
+00:25		
+00:30	CALM	CALM

TABLE IX. ANEMOMETER-MEASURED WIND SPEED AND DIRECTION, TOWER LEVEL 102'
RELEASED FROM LC-33 AT 0900 HRS MST/20 APRIL 1978
19302A GSRS, MISSILE NO. V-9, ROUND NO. V-9

WSM COORDINATES: X = 484,982.64 Y = 185,957.73 Z = 3,983.00

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

TIME (SEC)	SPEED (MPH)	DIR DEG
-00:30	CALM	CALM
-00:25		
-00:20		
-00:15		
-00:10		
-00:05		
-00:00		
+00:05		
+00:10		
+00:15		
+00:20		
+00:25	CALM	CALM
+00:30	00.5	325

TABLE X. ANEMOMETER-MEASURED WIND SPEED AND DIRECTION, TOWER LEVEL 202'
RELEASED FROM LC-33 AT 0900 HRS MST/20 APRIL 1978
19302A GSRS, MISSILE NO. V-9, ROUND NO. V-9

WSTM COORDINATES: X = 484,982.64 Y = 185,957.73 Z = 3,983.00

NOTE: WIND DIRECTION DATA ARE REFERENCED TRUE NORTH.

STATION ALTITUDE 3997.30 FEET MSL
20 APR. 78 0900 HRS MST
ASCENSION NO. 40

SIGNIFICANT LEVEL DATA
1100060040
S M P
TABLE XI.

GEODETIC COORDINATES
32.48034 LAT DEG
106.42307 LON DEG

PRESSURE GEOMETRIC ALTITUDE MILLIBARS MSL FEET	TEMPERATURE		REL. HUM. PERCENT
	AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE	
878.0 3997.3	16.8	-3.9	24.0
850.0 4897.7	13.5	-5.6	26.0
825.4 5706.7	11.9	-7.0	26.0
800.0 6565.2	11.9	-7.5	25.0
780.0 10184.9	4.5	-16.5	20.0
685.2 13754.7	2.9	-18.4	19.0
664.2 11581.4	2.2	-18.4	20.0
622.2 14145.3	-5.3	-22.2	25.0
568.0 15649.5	-6.9	-26.6	19.0
500.0 18868.1	-15.4	-33.2	20.0
465.4 20637.3	-18.8	-34.1	20.0

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GEODETIC COORDINATES
32.48034 LAT DEG
106.42307 LON DEG

UPPER AIR DATA
110000Z
S M R
TABLE XII.

STATION ALTITUDE 3997.30 FEET MSL
20 APR. 78 0900 HRS MST
ASCENSION NO. 40

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
						DIRECTION DEGREES(TN)	SPEED KNOTS	
3997.3	378.0	10.9	24.0	1.952.9	664.0	70.0	4.1	1.000255
4000.0	877.9	16.8	24.0	1.952.7	664.0	69.9	4.1	1.000255
4500.0	862.3	15.3	25.1	1.940.6	661.9	51.9	2.8	1.000251
5000.0	846.9	13.3	26.0	1.928.1	659.9	15.3	2.1	1.000247
5500.0	831.6	12.3	26.0	1.913.2	658.0	335.5	2.6	1.000243
6000.0	816.6	11.9	25.7	996.4	658.3	314.7	3.8	1.000239
6500.0	801.9	11.7	25.1	978.4	658.3	304.7	5.3	1.000234
7000.0	787.3	11.0	24.4	943.7	657.2	299.1	7.4	1.000230
7500.0	772.9	10.0	23.7	949.6	656.0	296.1	17.1	1.000225
8000.0	758.8	9.0	23.0	935.7	654.8	292.9	11.0	1.000221
8500.0	744.9	7.9	22.3	922.0	653.6	294.1	12.2	1.000217
9000.0	731.3	6.9	21.6	908.6	652.3	295.4	13.4	1.000213
9500.0	717.9	5.9	20.9	895.3	651.1	297.0	14.0	1.000209
10000.0	704.8	4.9	20.3	882.3	649.9	298.3	14.7	1.000205
10500.0	691.8	3.6	19.4	870.0	648.4	299.0	15.6	1.000201
11000.0	678.9	2.7	19.3	856.7	647.3	298.4	16.9	1.000198
11500.0	666.2	2.3	19.9	842.9	646.8	296.7	18.6	1.000195
12000.0	653.7	1.0	20.8	830.0	645.3	293.0	19.6	1.000192
12500.0	641.3	-0.5	21.8	818.7	643.5	289.6	20.2	1.000189
13000.0	629.1	-1.9	22.8	807.6	641.8	287.9	19.3	1.000186
13500.0	617.2	-3.4	23.7	796.6	640.1	288.8	19.1	1.000183
14000.0	605.6	-4.9	24.7	785.8	638.0	293.5	19.9	1.000181
14500.0	594.0	-5.7	23.6	773.1	637.3	299.3	21.7	1.000177
15000.0	582.5	-6.2	21.6	759.8	636.7	304.9	24.3	1.000174
15500.0	571.3	-6.7	19.6	746.7	636.0	306.6	25.5	1.000171
16000.0	560.2	-7.8	19.1	735.2	634.7	307.3	26.1	1.000167
16500.0	549.2	-9.1	19.3	724.4	633.1	304.6	26.5	1.000165
17000.0	538.4	-10.5	19.4	713.8	631.5	301.5	26.9	1.000162
17500.0	527.8	-11.8	19.6	703.3	629.9	299.3	27.9	1.000159
18000.0	517.5	-13.1	19.7	693.0	628.3	298.3	28.7	1.000157

GEODETIC COORDINATES
32.48034 LAT DEG
106.42307 LON DEG

UPPER AIR DATA
110106Z040
S M U

TABLE XII. (CONT)

STATION ALTITUDE 3997.30 FEET MSL
20 APR. 78 C900 HRS MST
ASCENSION NO. 40

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CM ³ METEN	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
						DIRECTION DEGREES (TN)	SPEED KNOTS	
18500.0	507.3	-14.4	19.9	482.9	676.7	299.0	29.7	1.000154
19000.0	497.3	-15.7	20.0	472.7	675.2	297.9	29.9	1.000152
19500.0	487.4	-16.6	20.0	461.6	674.1	295.9	28.1	1.000149
20000.0	477.6	-17.6	20.0	450.8	672.9			1.000147
20500.0	468.5	-18.5	20.0	440.2	671.7			1.000144

STATION ALTITUDE 3997.30 FEET MSL
 20 APR. 78 0900 HRS MST
 ASCENSION NO. 40

MANDATORY LEVELS
 110006040
 S M R
 TABLE XIII.

GEODETIC COORDINATES
 37.48034 LAT DEG
 106.42307 LON DEG

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM. PERCENT	WIND DATA	
HILLIBARS	FEET	AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE		DIRECTION DEGREES(TN)	SPEED KNOTS
850.0	4894.	13.5	-5.6	26.	24.5	2.2
800.0	6560.	11.9	-7.5	25.	303.8	5.5
750.0	8319.	8.2	-11.8	23.	293.6	11.8
700.0	10175.	4.5	-16.5	20.	298.6	15.0
650.0	12140.	.8	-19.2	21.	291.8	19.9
600.0	14223.	-5.4	-22.4	25.	295.8	20.4
550.0	16451.	-9.7	-28.2	19.	304.8	26.5
500.0	18842.	-15.4	-33.2	20.	298.5	29.1

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